



Memorandum

To: *Stephanie Vaughn (USEPA)*
Elizabeth Buckrucker (USACE)

From: *Sharon Budney (CDM Smith)*
George Molnar (CDM Smith)

Date: *June 12, 2012*

Re: *Status Report (June 2012)*
CPG Oversight of Chemical Water Column Monitoring
Lower Passaic River Restoration Project

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) is providing oversight of the Cooperating Parties Group (CPG) remedial investigation/feasibility study (RI/FS) field activities associated with chemical water column monitoring (CWCM), and the collection of chemical data in the Lower Passaic River (LPR).

CDM Smith oversight activities were conducted June 4 and June 5, 2012. Oversight included observations of the collection of samples in the LPR and tributaries in support of the CWCM study. In addition, CDM Smith also collected split samples at select locations. All activities were conducted in accordance with the CPG *Quality Assurance Project Plan/Field Sampling Plan Addendum (QAPP/FSP)*, *Remedial Investigation Water Column Monitoring/Small Volume Chemical Data Collection*, Revision 2, August 2011. The Louis Berger Group Inc. (LBI) conducted oversight of CWCM activities in Newark Bay. Oversight observations made by LBI staff are not included in this summary.

Photographs of field activities are in Attachment 1. Copies of the logbook notes are in Attachment 2. Copies of the chain of custody records are in Attachment 3.

General Summary

Oversight consisted of observations of in-river and field facility activities conducted by CPG contractors AECOM. Ocean Surveys Incorporated (OSI) provided vessel and sampling support.

All sample locations were verified by oversight staff using the map provided in CPG's QAPP/FSP. Review of the United States Geological Survey (USGS) gauging station at Dundee Dam indicated that maximum flow approached 1200 cubic feet per second (cfs). This flow rate was well within the criteria required for this event to be considered a routine event.

Per AECOMs QAPP, if river flow velocities are greater than (>) 250 cfs at Dundee Dam, samples would be collected at river mile (RM) 10.2 instead of 13.5. In addition, if flow at the

dam is less than ($<$) 1,000 cfs, samples would be collected at locations identified as Tidal 1 and Tidal 2 based on the location of the salt wedge instead of RMs 4.2 and 6.7 if flows were $>$ 1000 cfs.

AECOM did not follow the aforementioned approach for sampling based on river velocity. Tidal 1 and Tidal 2 locations were sampled despite flows exceeding 1000 cfs at Dundee Dam. Instead, RMs 4.2 and 6.7 should have been sampled. In summary, the following locations were sampled during this event:

- Dundee Dam
- RM 0
- RM 1.4
- RM 10.2
- Saddle River
- Second River
- Third River
- Tidal 1 which consisted of RMs 3.0, 4.75 (sampled twice), and 6.5
- Tidal 2 which consisted of RMs 2.2, 3.08 (sampled twice), and 3.95

Upon arrival at each RM location, CPG lowered a YSI water quality instrument to the bottom of the riverbed and then raised it while simultaneously collecting water quality data in real time. Attached to the instrument was sampling tubing attached to a remote pump located on the sampling vessel. After a full "cast", the instrument was lowered to approximately 3 feet above river bottom, and the pump was activated allowing the tubing to purge for 39 seconds followed by sample collection. Once all samples were collected at the lower depth, the instrument was raised to approximately 3 feet below river surface, the tubing was allowed to purge and another sample set was collected.

A similar approach was used above Dundee Dam and at the tributaries; however, samples were only collected from a single depth, approximately midway in the water column. The YSI and sampling tubing were deployed either off a bridge such as at Saddle River, or crews waded in such as at the Second and Third Rivers. Sampling above Dundee Dam was conducted from a boat.

For this sampling event, CDM Smith accepted split samples from the following locations:

- Second River (non-tidal)
- Dundee Dam (non-tidal)
- RM 10.2 (during maximum ebb tide)
- RM 1.4 (during high slack tide)
- RM 0 (during maximum flood tide)

Throughout each day, samples were collected and shuttled back to the CPG facility for processing and packing. Oversight of activities at the CPG field facility conducted on June 4 and 5 indicated a relatively organized system of sample logging, labeling, chain of custody generation, and packing given the large volume of samples and bottleware involved. All sampling packing activities were conducted in accordance with AECOM's QAPP.

Summary of Daily Activities

The following is a summary of daily activities observed during CDM Smith's oversight of CWCM activities:

Dundee Dam, Saddle River, Second River and RM 10.2 (June 4, 2012)

CDM Smith oversight staff observed boat-based sample collection above Dundee Dam and RM 10.2. In addition, sampling activities on the Saddle River and Second River were also observed. At each location, a YSI water quality instrument obtained a profile of real-time measurements through the water column, followed by the collection of surface water via pump and tubing mounted to the instrument. Dundee Dam, Saddle River and Second River surface water samples were collected at mid river depths, while RM 10.2 surface water samples were collected from approximately 3 feet above river bottom, and 3 feet below river surface.

CDM Smith oversight staff collected split samples at the Dundee Dam, RM 10.2 and Second River locations. Split samples and corresponding CPG samples are presented in Table 1. Copies of CDM Smith's signed chain of custodies can be found in Attachment 3.

RMs 0, 1.4, and Tidal 1 (June 5, 2012)

CDM Smith oversight staff observed boat-based sample collection at RMs 0, 1.4 and Tidal 1 at RM 4.75. At each location, a YSI water quality instrument obtained a profile of real-time measurements through the water column, followed by the collection of surface water from approximately 3 feet above river bottom, and 3 feet below river surface via pump and tubing mounted to the instrument.

Per AECOM's QAPP, samples were collected four times over the period of one tidal cycle at each location beginning with max flood tide and ending at low slack tide. Oversight crews observed one sampling event at each of the above mentioned RMs starting at RM 0 (maximum flood tide) followed by 1.4 (high slack tide) and Tidal 1 RM 4.75 (maximum ebb tide). Split samples and corresponding CPG samples are presented in Table 1. Copies of CDM Smith's signed chain of custodies can be found in Attachment 3.

QAPP Compliance

All field activities were conducted in accordance with AECOM's QAPP procedures except for the collection of the Tidal 1 and 2 locations. Based on AECOM's QAPP, samples should have been collected at RM 4.2 and 6.7 since flows at Dundee dam exceeded 1000 cfs. CDM Smith oversight informed AECOM of this discrepancy.

Table 1
Cooperating Parties Group and CDM Smith Split Sample Identification
June 2012 Chemical Water Column Monitoring Oversight
Lower Passaic River Restoration Project
Lower Passaic River, New Jersey

Location	CPG Sample ID	CDM Split Sample ID	QC Samples	Tide Event	Collection Date	Analysis
Second River	12F-CE05-T2R-AS	12F-CE05-T2R-AS-C	MS/MSD **	NA	6/4/2012	PCB congeners, PCDD/PCDF, cadmium - copper - lead (total and dissolved), mercury (total and dissolved), TOC, DOC, POC, SSC, TDS
Dundee Dam	12F-CE05-T175-AS	12F-CE05-T175-AS-C		NA	6/4/2012	
RM 10.2	12F-CE04-T102-AS	12F-CE04-T102-AS-C		maximum ebb	6/4/2012	
RM 1.4	12F-CE03-T014-AS	12F-CE03-T014-AS-C		high slack	6/5/2012	
		12F-CE03-T014-AS-CX	Duplicate *	high slack	6/5/2012	
RM 0	12F-CE02-T000-AS	12F-CE02-T000-AS-C		maximum flood	6/5/2012	

CPG - Cooperating Parties Group

DOC - dissolved organic carbon

ID - identification

MS/MSD - matrix spike/matrix spike duplicate

NA - not applicable; tributaries were not sampled over the course of a full tidal cycle

PCB - polychlorinated biphenyl

PCDD/PCDF - polychlorinated dibenzodioxins/polychlorinated dibenzofurans

POC - particulate organic carbon

QC - quality control

SSC- suspended solids concentration

TDS - total dissolved solids

TOC - total organic carbon

* - field duplicate sample of CDM split sample 12F-CE03-T014-AS-C

** - MS/MSD only for total and dissolved cadmium - copper - lead - mercury, TOC, and DOC

Attachment 1
Photographs of Field Activities

Photo 1. Deploying water quality meter at RM 0.



Photo 2. Clean hands dirty hands sampling at RM 0.

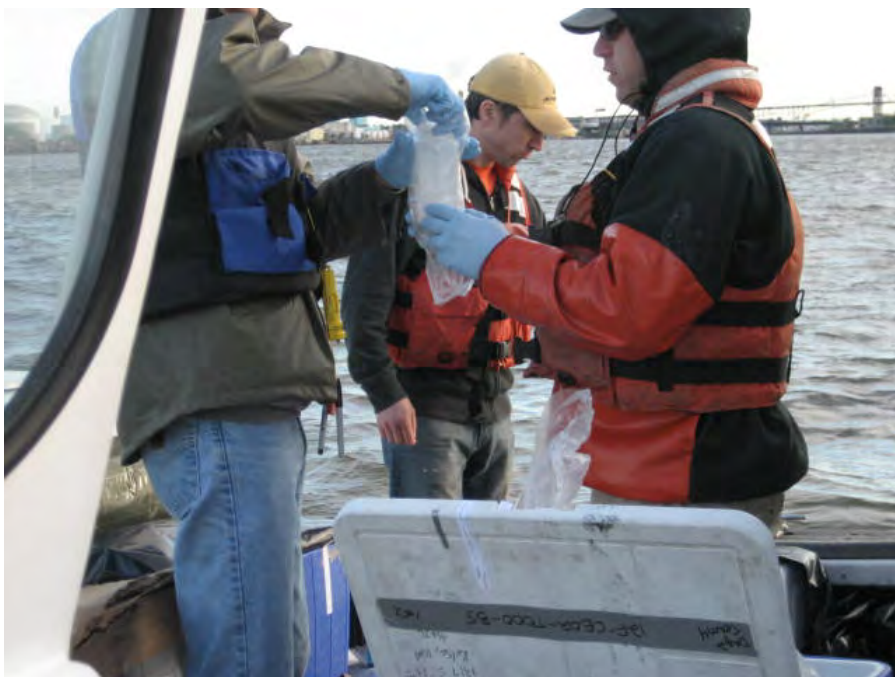


Photo 3. Sampling at RM 0.



Photo 4. Sampling for dissolved metals using an inline filter at RM 1.4.



Photo 5. Sampling at RM 10.2.

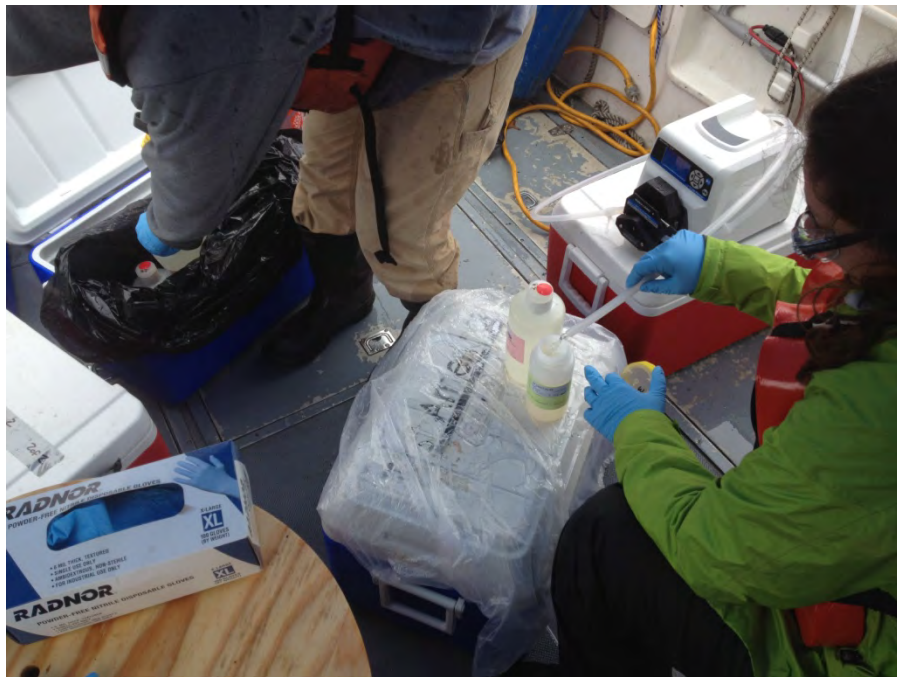


Photo 6. Sampling at location Tidal 1.

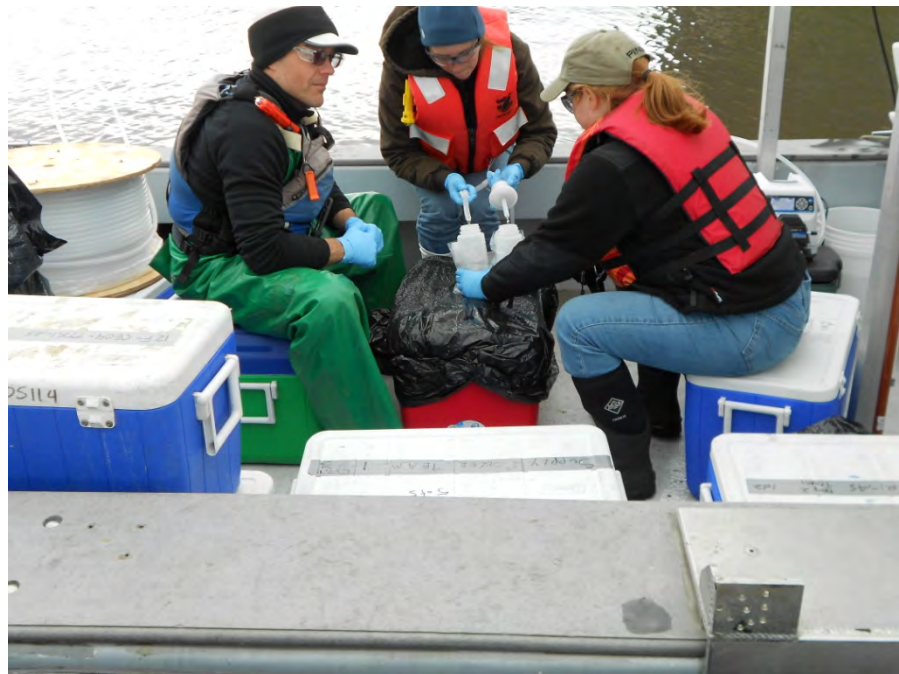


Photo 7. Crews sampling at the Second River.



Photo 8. Packing samples at the CPG facility.



Attachment 2

Copies of Oversight Field Logbook Notes

Lower Passaic River Date 6-4-12

CWCM
J. Nakowski

PPE: Modified Level D

Weather: overcast

Personnel: JR, Chris Whitten,
PC (COM-Smith)Objective: Collection of CWCM
routine samples0655 JR arrives at CPG
facility.0700 JR hands off bottleware
to PC and CW.

0800 Arrive at Edwood Park

0900 Skimmer launches toward
Dundee Dam.0940 ADCP is lower into water
halfway between water surface and bottom.0954 Split sample collection
begins at 12F-CECH-TITRASC1045 JR and AE-COM depart
from boat1110 JR meets Chris Whitten
at CPG facility in order
to receive 12F-CECH-T2RASC
sample1125 Chris Whitten head out
JR 6-4-12

Lower Passaic River Date 6-4-12

CWCM
J. Nakowskito Saddle River in order
to observe sample collection* Note Pat Connelly was going to
split sample at River Mile
10.2, but due to Miller's boat
company being tardy he had
to switch his split sample
location.1145 JR starts to label
bottleware since heavy rains
hindered this task on boats1230 JR arrives in CPG
warehouse and observes
sample packing.

1350 JR departs site

JR
6-4-12

Location Passaic River Date 6-4-12
 Project / Client EPA
Sample Summary

ID	time	date	QA/QC
12F-CE05-T2R-AS-C0836		6-4-12	MS/MSD
12F-CE05-T17-AS-C0954			NA
12F-CE04-T102-AS-C1207			NA
12F-CE02-T000-AS-C0707		6-5-12	NA
12F-CE03-T014-AS-C0943			
"	"	X0943	

J.R.

6-5-12

Location Passaic River Date 6-5-12
 Project / Client EPA
J. Mahan

PRE: Modified Level D
 Weather: 60° Fahrenheit
 Personnel: JR, SO, CLW
 (CON), Miller's
 objective: Receive samples off
 of Miller boat and shuttle
 SO back to CPG facility.
 1000 JR arrives at Kearny
 boat ramp.
 1030 SO arrives at ramp
 on Miller boat. JR
 receives samples off
 of boat.
 1100 JR drops SO off
 at CPG facility.
 1120 JR and SO depart
 site.

J.R.

6-5-12

Location Lower Passaic River Date 6-4-12Project / Client CWCM / USACE

P. Connelly

07:00 - P. Connelly (com smith) on site at CPO facility. Meets ~~with~~ PC ^{5:4} with J. Rakowski and C. Whitton also of COM Smith. ————— PC

Task - PC is to do oversight and collect a split sample at RM 10.2 on the AECOM crew collecting chemical water column monitoring samples. ————— PC

Weather - overcast, 60's °F, rain likely

PPE - modified level D. ————— PC

07:40 - PC is awaiting personell from Miller's Launch to meet him at CPO dock. Miller's is to provide a transport boat ~~to~~ for PC to go to RM 10.2.

07:42 - PC gets a call from Chris of Miller's Launch. He states that he just left Miller's Staten Island Facility and won't be on time. He states that there was a scheduling confusion at Miller's resulting in his lateness. He also states that he won't be able to get his boat under the Bridge St. Bridge or Clay St Bridge in Newark, NJ until after high tide, which is ~ 08:30.

P. Connelly 6-4-12

Location Lower Passaic River Date 6-4-12Project / Client CWCM / USACE

P. Connelly

07:47 - PC calls J. Rakowski and informs him of the issue. PC and JR decide that we will have to get the RM 10.2 split sample during the 11:30 sampling cycle rather than the planned 08:30 sampling cycle. ————— PC

08:00 - PC contacts Helen (AECOM), who is on the boat at RM 10.2 to inform her that ~~the~~ ^{PC} COM Smith is not able to be there for the 08:30 sample and to plan on a split sample at 11:30 instead. She is fine with this plan. ————— PC

08:30 - Chris of Miller's calls PC to confirm that he is at the bridges in downtown Newark and cannot get under until the tide drops. ————— PC

09:40 - PC gets a ride aboard the cooler transport vessel being operated by OSI to shuttle coolers + bottles to AECOM. OSI takes PC to RM 10.2. ————— PC

P. Connelly 6-4-12

Location Lower Passaic River Date 6-4-12Project / Client CWCM / USACEP. Connelly

09:55 - PC boards the vessel Osprey.
AECOM crew onboard is Helen Jones
and Jeff Hultzer. ——— PC

11:30 - AECOM lowers water quality
meter with tubing attached to 3 feet
above bottom. Bottom is 15.8 feet so
sample will be taken from 12.8 feet
below surface. This will be sample

12F-CE04-T102-BS. ——— PC

11:40 - Begin purging ——— PC

11:43 - Sample time at 12F-CE04-T102-
BS. ——— PC

11:55 - Finished collecting 12F-CE04-T102
-BS. AECOM will pull pump up to 3 feet
below water surface for next sample.
CDM Smith will collect a split at the
next interval. ——— PC

12:04 - Begin purging 12F-CE04-T102-AS

12:07 - Sample time for 12F-CE04-T102-AS.
CDM Smith collects split here. ——— PC

12:30 - Finished collecting sample

13:00 - PC returns to CPG dock and
hands off samples to J-Rakowski

13:25 - P.C. off site ——— PC

P-449 6-4-12

Location Lower Passaic Date 6/5/12Project / Client CWCM - USACESurface Water Split

05:15 → SO arrives at
CPG dock in Rutherford, NJ
Chris Whitten (CW) has
packed all three coolers onto
boat and is ready to go.
PPE → Level D Monitoring
w/ PFD's

05:17 → Depart CPG dock
en route to RMO

05:58 → Arrive at RMO
and tie off to boat.

06:05 → Untie due to
pushing off location

06:20 → Re-tie to boat
and lower YSI to cast a
~~split~~ profile of water
column.

06:25 → Complete
water column profile
and attach tubing to YSI
and lower into water

Total Depth → 15.26'

GPS Coordinates: N → 683229.11
E → 397427.05'

3016 6/5/12

Location Lower Passaic River Date 6/5/12Project / Client CWCM - USAEESurface Water Split

06:31 → Start Initial Purge
 06:35 → Begin collection
 of sample 12F-CE02-T000-B

Order of analyses collected
 are as follows:

Mercury (Total / Dissolved)
 Methyl Mercury (Total / Dissolved)
 TAL Metals & T_i (Total / Dissolved)

1 Sulfide

1 TOC

1 POC / DOC

Alkalinity, Sulfide, Chloride

1 SSC / TDS

YDS

PCB

PCDD / PCDF

Chlorophyll

06:55 → Complete sampling
 of 12F-CE02-T000-B

07:02 → Drop YSI to
 profile water column

8014 6/5/12

Location Lower Passaic Date 6/5/12Project / Client CWCM - USAACESurface Water Split

Total Depth → 15.26'

N → 683229.11'

E → 597427.95'

07:05 → Pump Drop YSI
 to 3' below top of water
 surface and purge

07:07 → Begin collecting
 CDM split Sample 12F-CE02-
 T000-RM0

07:20 → Cast (Fml)
 measurements for water
 profile.

07:25 → Arrive at RM 1.4
 and tie off to boat. CDM
 Smith will have to wait
 until 9:06 AM to

0

09:07 → Lower YSI to
 collect water profile

Total Depth → 19.8'

GPS Coordinates:

N → 691199.79'

E → 597995.88'

09:11 → Attach tubing

8014 6/5/12

Location Lower Passaic Date 6/5/12
 Project / Client CWCM - USACE
Surface Water Split

to YSI and lower to ~
 3' from river bottom

09:15 → Begin initial
 purge at location RM 1.4 →
 12F-CE03-TO14-BS

09:17 → Begin collection
 of sample 12F-CE03-TO14-BS

09:30 → AECOM completes
 collection of sample, 12F-

CE03-TO14-BS and pulls
 up YSI. Tubing is replaced

and field tech prepares
 for the top sample. CDM

will collect their split sample
 along with duplicate.

09:36 → Lower YSI to
 obtain a profile of the
 water column.

09:39 → Conduct initial
 purge.

09:43 → Collect CDM
 split sample and duplicate

12F-CE03-TO14-AS-C and
 12F-CE03-TO14-AS-CX

SO 6/5/12

Location Lower Passaic Date 6/5/12
 Project / Client CWCM - USACE
Surface Water Split

* Coordinates are:

N → 691199.79'

E → 597995.88'

Total Depth → 19.8'

* Purging Depth is 3'

10:30 → Sample collection complete. SD
 and Ch head upriver to Kearsy Boat
 Ramp.

10:45 - Meet JR at Kearsy dock. SD
 disembarks with samples. Ch returns
 downriver.

11:30 - AECOM vessel waiting for tide to
 lower to pass under Bridge St Bridge

12:15 - Echo anchors at RM 4.75.

12:20 - Cur on Miller vessel ties up to
 Echo. Tidal cycle is Max Ebb Velocity.

12:29 - AECOM begins purge for
 collection of sample 12F-CE04-TTRI-BS.

12:31 - Sample start time for 12F-CE04-TTRI-BS

12:44 - Sample collection complete.

12:46 - YSI lowered for water column
 profile. Begin purge for collection
 of sample 12F-CE04-TTRI-AS.

12:53 - Sample time.

Ch 6/5/12

Location Lower Passaic Date 6/5/12Project / Client CH2M - USACE1302 - Sample collection completed. Ch
returns again to CPG facility.1340 - Ch arrives at CPG facility.1400 - Receive River Mile locations for
Tidal 1 and Tidal 2 for each tidal cycle.
Ch. Site.

~~Ch. Site~~
6/5/12

Location _____ Date _____

Project / Client _____

Location LPR Date 3/27/12
 Project / Client CWCM Oversight / USACE
P. Connelly

- 1140 - PC arrives at Arlington dock and transfers split samples to E. Kulvicki, who will take them to Edison, NJ Warehouse to be packed and shipped. The Sandy Miller returns to Rm 4.2 to get C. Whittan. PC heads to OSIP, CPG Facility to observe sample packing.
- 1245 - PC finished observing sample packing at CPG Facility
- 1300 - PC offsite

~~7:00 PM~~
~~3/27/12~~

Location LPR Date 6/4/12
 Project / Client CWCM Oversight / USACE
2nd River C. Whittan

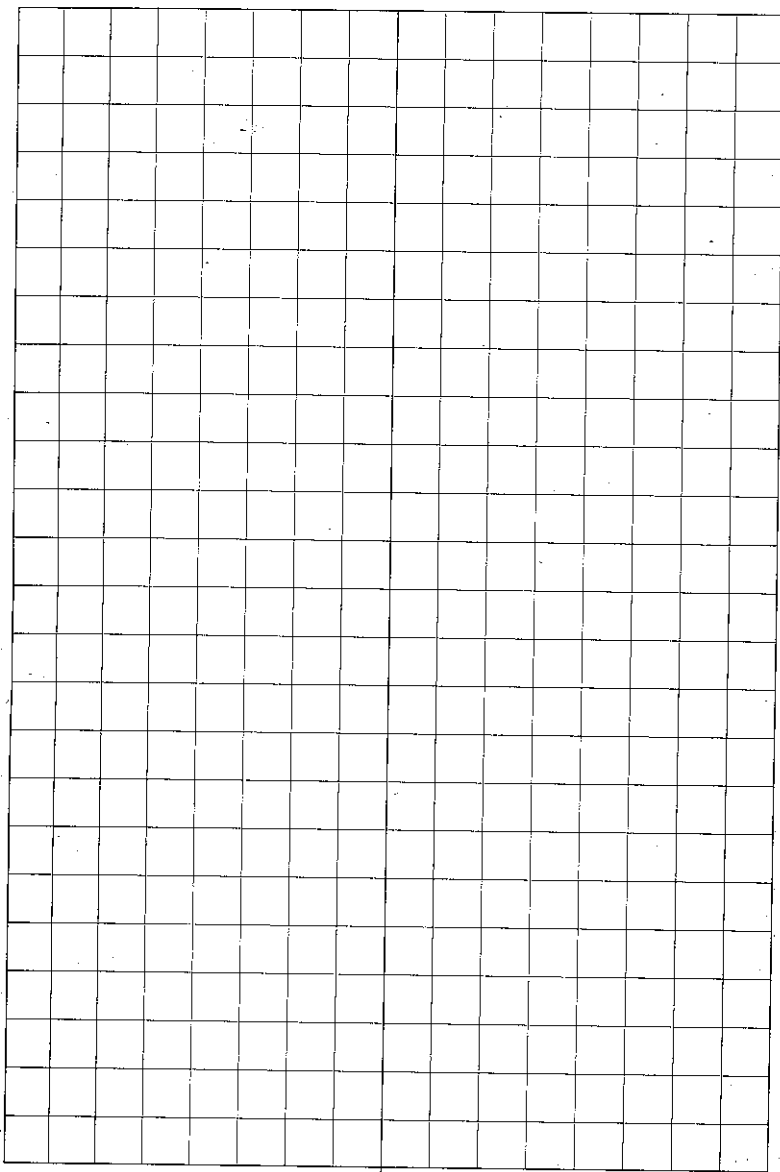
- 0700 - CDM Smith onsite at CPG facility.
- 0730 - AECOM holds kickoff meeting and teams head to sampling locations.
- 0800 - C. Whittan and AECOM team proceed to 2nd River, Justin (AECOM) holds health & safety discussion, and AECOM begins.
- 0830 - Sample time. JK recorded as sampler.
- 0921 - Sampling complete. CW and AECOM return to CPG facility.
- 0945 - 2nd River team packs samples. One 3rd River team return, both teams will head to Saddle River. CW performing oversight of facility operations.
- 1030 - 3rd River team returns to facility.
- 1050 - AECOM pours field blank at facility. Team heads to Saddle River.
- 1115 - Transfer samples to JR.
- 1130 - CW arrives at Saddle River.
- 1135 - 3 minute purge performed before sampling slot. Sample times: 1142.
- 12E - CE05 - TSRP AS
- MS/MSD collected by AECOM.
- No CDM's split collected.
- 1316 - Sampling complete.

Location LPR Date 6/4/12
 Project / Client CH2M / USACE
Saddle River

1330 - CLR observes AECOM breaking
 down equipment. AECOM team returns to
 CPU facility to pack samples. CLR offsite.

~~6/4/12~~
~~CH2M / USACE~~

Location _____ Date _____
 Project / Client _____



Attachment 3
Copies of Signed Chain of Custodies

AirbillNo:

CHAIN OF CUSTODY RECORD

Passaic - F2L

Case Complete: False

Cooler #:

No: 2-120611-114002-0004

Lab: EPA-DESA laboratory

Lab Address: 2890 Woodbridge Ave

Lab Phone: 7323216707

[illegible]

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

[illegible]

Passaic - F2L
Case Complete: False
Cooler #:

Lab: Microbac Laboratories, Inc.
Lab Address: 250 W. 84th Drive
Lab Phone: 2197698378

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

[illegible]

Passaic - F2L
Case Complete: False
Cooler #:

Lab: Shealy Environmental
Lab Address: 106 Vantage Point Drive
Lab Phone: 803-791-9700

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	J.R.	6-4-12									

Passaic - F2L
Case Complete: False
Cooler #:

Lab: AXYS Analytical Services Ltd.
Lab Address: 2045 Mills Road W.
Lab Phone: 8883730881

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

[illegible]

Cooler #:

Lab Phone: 7323216707

[illegible]

DateShipped: 6/5/2012
CarrierName: FedEx
AirbillNo: 798457573590

CHAIN OF CUSTODY RECORD

Passaic - F2L
Case Complete: False
Cooler #:

No: 2-053112-155115-0008

Lab: AXYS Analytical Services Ltd.
Lab Address: 2045 Mills Road W.
Lab Phone: 8883730881

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

[illegible]

Passaic - F2L
Case Complete: False
Cooler #:

Lab: Shealy Environmental
Lab Address: 106 Vantage Point Drive
Lab Phone: 803-791-9700

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time
	J.D.	6-5-12			

Passaic - F2L
Case Complete: False
Cooler #:

Lab: Microbac Laboratories, Inc.
Lab Address: 250 W. 84th Drive
Lab Phone: 2197698378

[illegible]

Special Instructions:	SAMPLES TRANSFERRED FROM
	CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time
	J.D.	6-5-12			